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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/730,188      | 12/05/2000  | Kazushi Takanashi    | 33152               | 7999             |

116 7590 12/27/2005

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| EXAMINER |
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ZHENG, EVA Y

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| ART UNIT | PAPER NUMBER |
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2634

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/730,188

Applicant(s)

TAKANASHI ET AL.

Examiner

Eva Yi Zheng

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 20-22 is/are allowed.  
6) ☒ Claim(s) 1-5, 8-10 and 14-19 is/are rejected.  
7) ☒ Claim(s) 6, 7 and 11-13 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 10/31/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Objections to drawing and claims have been withdrawn due to applicant's amendment.

### ***Response to Arguments***

2. Applicant's arguments filed 10/31/05 have been fully considered but they are not persuasive. Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

Applicant's argument – Bhatt does not teach or suggest restarting a starting step of while the reception signal is equalized.

Examiner's response – Applicant is reminded that the Examiner is entitled to give the broadest reasonable interpretation to the language of claims. According to Applicant Admitted Prior Art (AAPA) of Fig. 15, reception signal S1 is inputted to FF filter 9, and coupled with a discriminator 5, which constitutes an equalization output S2. This has shown that reception signal is equalized. The differences between AAPA and applicant's invention involves a tap coefficient monitoring unit and impulse response predictor according to the drawing and specification. Bhatt teaches a monitoring or control algorithm to operate an adaptive equalizer's coefficients, and restarting adaptive equalization if not all taps are converged, wherein initialize taps 202 in Fig. 2 constitutes a starting step of equalization, which is a combination of FIR and IIR filters.

***Claim Objections***

3. Claim 10 is objected to because of the following informalities: on line 12, please change "and" to –an --.

Appropriate correction is required.

4. Claim 3 is objected to because of the following informalities: on line 1, please change "waveform" to – A waveform --.

Appropriate correction is required.

5. Claims 9-13 are objected to because of the following informalities: on line 1, please change "mobile" to – A mobile --.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 8-10, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Bhatt et al. (US 5,517,213).

- a) Regarding to claim 1, AAPA disclose a waveform equalizer comprising:

an equalizing filter unit including a delay circuit with a tap (block 9 and 10 in Fig. 15);

a discriminator which decodes an output signal of said equalizing filter unit (block 5 in Fig. 15);

tap arrangement control means which controls a tap arrangement of said equalizing filter unit (block 8 in Fig. 15; Page 1, L16 - Page 2, L8); and

a reception signal is equalized (S2 in Fig. 15; [0002]).

AAPA discloses all of the subject matter as described above except for specifically teaching of a tap coefficient monitoring unit which monitors a tap coefficient of the equalizing filter unit, and changes the tap arrangement of the equalizing filter unit so as to restart a starting step of equalizing steps for equalizing a reception signal.

Bhatt et al., in the same field of endeavor, teaches an equalizer processor (20 in Fig.1) being controlled by coefficient control network (80 in Fig. 1), which constitutes tap coefficient monitoring unit (as shown in Fig. 2). It monitors tap coefficients of the adaptive equalizer, and if the coefficients have not converged, then the equalization is reinitiated (Col 3, L47-Col 4, L24).

By providing a tap coefficient controller to an equalizer processor would optimize and proper operation of tap arrangement. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the coefficient control network processor taught by Bhatt et al. with the waveform equalizer taught by AAPA. By doing so, the waveform equalizer has better performance while transfer path varies and improve multipath fading problems.

- b) Claims 2, 3, 8-10, and 14-19 are rejected under similar reasons as rejected claim 1.
- c) Regarding to claim 4, Bhatt et al. disclose a waveform equalizer as claimed in any one of the preceding claims 1, 2, and 3, wherein said tap coefficient monitoring unit monitors only a specific tap, and when a sharp change in a tap coefficient of said specific tap is detected, said tap coefficient monitoring unit instructs that the tap arrangement of said equalizing filter unit is changed so as to restart the equalization of the reception signal (as shown in Fig. 2; Col 3, L58-Col 4, L23).
- d) Claim 5 is rejected under similar reasons as rejected claim 4.

***Allowable Subject Matter***

- 8. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
- 9. Claims 11-13 would be allowable if rewritten to overcome the objections, set forth in this Office action.
- 10. Claims 20-22 are allowed.
- 11. The following is an examiner's statement of reasons for allowance and indication of allowance:

None of the prior art teaches or suggest a wireless apparatus comprising a detector for detects a moving speed of a mobile station wireless apparatus, wherein when the moving speed is higher than a preselected threshold value, the tap

arrangement of an equalizing filter unit is changed so as to restart an equalization of a reception signal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

**12. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Zheng whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Zheng  
Examiner  
Art Unit 2634

December 20, 2005



**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINE**  
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